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QUALITY ASSURANCE REVIEW OF THE

RUETGERS-NEASE CHEMICAL COMPANY, INC.

STATE COLLEGE, PA SITE

March 18, 1991

Prepared for:

SMC ENVIRONMENTAL SERVICES

501 Allendale Road King of Prussia, PA 19406

Prepared by:

ENVIRONMENTAL STANDARDS, INC.

1220 Valley Forge Road P.O. Box 911 AR 302555 Valley Forge, PA 19481





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ORIGINAL (Red)

Introduction

This quality assurance review is based upon a review of all data generated from the 8 surface water samples, 13 soil boring samples and 10 aqueous field blank and trip blank samples that were collected during January 1991 for the Ruetgers-Nease Chemical Company, Inc. State College Site. The samples that have undergone a rigorous quality assurance review are listed on Table 1. The data packages were received in 5 distinct Sample Delivery Groups (SDGs), as specified on Table 1.

This review has been performed with guidance from the "Functional Guidelines for Evaluating Organics Analyses With Modifications for Use Within Region III" (U.S. EPA, 1988).

The reported analytical results are presented as a summary of the data in Section 2. All of the analytical data were examined to determine contractual compliance relative to the analytical requirements and deliverables specified in the U.S. EPA Contract Laboratory Program (CLP) protocol and/or the project-specific Standard Operating Procedures (SOPs) for mirex and kepone. Qualifier codes have been placed next to the results so that the data user can guickly assess the qualitative and/or quantitative reliability of any result. Details of this quality assurance review are presented in the narrative section of this report. This report was prepared to provide a critical review of the laboratory analyses and reported analytical results. Rigorous quality assurance reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories. The nature and extent of problems identified in this critical review should not be interpreted to mean that those results that do not have qualifier codes are less than valid.





. SAMPLES INCLUDED IN THIS QUALITY ASSURANCE REVIEW

TABLE 1

SMC Environmental Services Sample Number	Laboratory Sample Number	Case Number/ SDG	Date of Sample Collection	Fractions Examined
27-1-7-91-SW1	7980-01	0111/SDG01	1/7/91	V,M,K
28-1-7-91-MS-SW1	7980-01 MS	0111/SDG01	1/7/91	V,M,K
29-1-7-91-MSD-SW1	7980-01MSD	0111/SDG01	1/7/91	V,M,K
30-1-7-91-SW2	7980-02	0111/SDG01	1/7/91	V,M,K
33-1-7-91-SW3	7980-03	0111/SDG01	1/7/91	V,M,K
32-1-7-91-SW4	7980-04	0111/SDG01	1/7/91	V,M,K
34-1-7-91-SW5	7980-05	0111/SDG01	1/7/91	V,M,K
31-1-7-91-SW6	7980-06	0111/SDG01	1/7/91	V,M,K
26-1-7-91-FB	7980-07	0111/SDG01	1/7/91	V,M,K
35-1-7-91-TB	7980-08	0111/SDG01	1/7/91	V
49-1-9-91-SB8-A	7983-01	0116/SDG01	1/9/91	V,M,K
50-1-9-91-SB8-B	7983-02	0116/SDG01	1/9/91	V,M,K
51-1-9-91-SB8-C	7983-03	0116/SDG01	1/9/91	V,M,K
48-1-9-91-SB8-FB	7983-04	0116/SDG01	1/9/91	V,M,K
52-1-9-91-TB	7983-05	0116/SDG01	1/9/91	V
53-1-10-91-SB5-A	7994-01	0116/SDG02	1/10/91	V,M,K
54-1-10-91-SB5-B	7994-02	0116/SDG02	1/10/91	V,M,K
55-1-10-91-FB	7994-03	0116/SDG02	1/10/91	V,M,K
56-1-10-91-TB	7994-04	0116/SDG02	1/10/91	· V
57-SB3-A	8016-01	0116/SDG03	1/15/91	V,M,K
58-SB3-B	8016-02	0116/SDG03	1/15/91	V,M,K
59-SB3-C	8016-03	0116/SDG03	1/15/91	V,M,K
60-SB6-A	8016-04	0116/SDG03	1/15/91	V,M,K
61-SB6-B	8016-05	0116/SDG03	1/15/91	V,M,K
62-FB	8016-06	0116/SDG03 🗸	R 3 0 2/5578	M,K

TABLE 1 (Cont.)

SMC Environmental Services Sample Number	Laboratory Sample Number	Case Number/ SDG	Date of Sample Collection	Fractions Examined
63-TB	8016-07	0116/SDG03	1/15/91	.V
64-SB2-A	8037-01	0117/SDG01	1/16/91	V,S,M,K
65-SB2-B	8037-02	0117/SDG01	1/16/91	V,M,K
ORIGINAL 66-SB2-C	8037-03	0117/SDG01	1/16/91	V,M,K
ORID Red 67-FB	8037-04	0117/SDG01	1/16/91	V,S,M,K
68-TB	8037-05	0117/SDG01	1/16/91	V

NOTES:

V - TCL VolatilesS - TCL Semivolatiles

M - Mirex K - Kepone

Section 1 Quality Assurance Review



A. Data Evaluation

The organic analyses of 8 surface water samples, 13 soil boring samples and 10 aqueous field blank and trip blank samples were performed by Enseco-ERCO Laboratory of Cambridge, Massachusetts. The samples were collectively analyzed for the Target Compound List (TCL) volatiles and TCL semivolatiles by CLP protocols and for mirex and kepone utilizing the projectspecific analytical SOPs. The findings in this report are based upon a rigorous review of holding times, blank analysis results, surrogate recoveries, matrix spike recoveries, GC/MS tuning, target compound matching quality, isotope ratios, calibrations, internal standard areas, system performance and quantitation of positive results. The analytical results are provided in Section 2 of this report.

Overall, the organic data was good. Contractual criteria and reporting requirements were met for this data set, with the exception of the following. It should be emphasized that the following items are contractual in nature and do not necessarily affect data usability. addressed separately.

Correctable Deficiencies

- 1. The entire SMC Environmental Services sample identifications were not used on any of the QC forms or raw data for Case 0111/SDG01, Case 0116/SDG01 and Case 0116/SDG02. Instead, the laboratory abbreviated all of the sample identifications.
- 2. A peak with a retention time of approximately 4 minutes was observed in the volatile chromatograms of all samples. This peak appears to be greater than 10% of the area of the closest internal standard, it was not library searched as required. Although this peak is most likely a laboratory artifact [methanol and/or an air leak (CO₂)], the laboratory is still required to perform a library search.
- 3. According to the Chain-of-Custodies provided, it appears that the laboratory misidentified sample 53-1-10-91-SB5-A as 53-SB5-B on all of the VOA QC Forms.
- 4. The library search for the TIC with a retention time of 12.89 minutes in the volatile fraction of sample 53-1-10-91-SB5-A was not included in the data package provided.
- 5. The mass spectrum for ethylbenzene reported in sample 57-SB3-A and for styrene reported in sample 58-SB3-B were not included in the data package provided.
- 6. The laboratory reported the presence of methylene chloride in the volatile laboratory method blank VBLK02 (Case 0117/SDG01) at a concentration of 5 μ g/L. According to the raw data provided, the observed concentration of methyleacchloride in method blank VBLK02 is 6 μ g/L.





The following peaks appear to be greater than 10 percent of the area of the nearest 7. internal standard and should have been library searched.

<u>Sample</u>	Fraction	Retention Time of Peak (min.)
50-1-9-91-SB8-B	VOA	24
53-1-10-91-SB5-A	VOA	34
54-1-10-91-SB5-B	VOA	34 and 38
58-SB3-B	VOA	29.5
59-SB3-C	VOA	29.5
61-SB6-B	VOA	27.5
VBLK05 (Case 0116/SDG03)	VOA	28
VBLK02 (Case 0117/SDG01)	VOA	28
64-SB2-A	VOA	32 and 34
68-TB	VOA	29
67-FB	BNA	7.5

8. The percent relative abundance values for the following mass ions are misreported on the Form V's associated with the following BFB tunes. Although the values observed in the raw data differ by 0.1 percent, the percent relative abundances were still met with respect to the CLP acceptance criteria.

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<u>Instrument</u>	Tune Date/Time	Mass Ion (m/z)	Reported % Relative Abundance	Observed % Relative Abundance
MS-V3	1/11/91 at 08:57	176	76.1%	76.2%
MS-V3	1/11/91 at 08:57	177	5.3%	5.4%
MS-V3	1/14/91 at 20:17	177	4.8%	4.7%
MS-V3	1/13/91 at 08:56	176	77.6%	77.7%
MS-V2	1/13/91 at 08:40	175	7.3%	7.4%
MS-V2	1/13/91 at 08:40	177	6.0%	6.1%
MS-V3	1/14/91 at 09:48	176	79.8%	79.7%
MS-V1	1/22/91 at 08:23	176	80.3%	80.4%
MS-V2	1/22/91 at 20:37	175	7.1%	7.2%
MS-V3	1/18/91 at 20:27	176	99.1%	99.0%
MS-V3	1/18/91 at 20:27	177	6.6%	6.7%

- 9. The reported results of "not detected" for mirex and kepone in sample 54-1-10-91-SB5-B (Case 0116/SDG02) are incorrect. Examination of the raw data revealed that mirex $(3.05 \mu g/Kg)$ and kepone $(6.35 \mu g/Kg)$ are confidently present in this sample (all quantitative ion ratio criteria were met for this sample for the quantitation as well as the confirmation cluster). Since the concentrations of mirex and kepone were detected at levels less than the quantitation limits, these results should be considered estimated. Accordingly, these results have been added to the data tables with the appropriate "J" qualifier. Documentation of the reviewer's calculations are presented as the last several pages of Section 3, Part C.
- The Form I's for the laboratory method blanks for the mirex and kepone fraction of the 10. samples in Case 0116/SDG03 were not included in the data package provided.





Noncorrectable Deficiencies

- 1. The date of sample collection for samples 66-SB2-C, 67-FB and 68-TB appear to be incorrect as reported on the Chain-of-Custody provided. These samples were apparently collected on 1/16/91 instead of 1/19/91.
- 2. Low recoveries were obtained for all three volatile surrogate compounds in samples 64-SB2-A, 66-SB2-C, 49-1-9-91-SB8-A, 50-1-9-91-SB8-B, 51-1-9-91-SB8-C and 60-SB6-A but these samples were not reanalyzed as required (SOW 288, E-20).
- 3. According to the laboratory case narrative, the temperature of the cooler containing all fractions of the samples in Case 0117/SDG01 was found to be 7.2°C upon receipt at the laboratory. In addition, the volatile vials for samples 67-FB and 68-TB were observed by laboratory personnel to contain headspace.
- 4. It appears that the initial and continuing VOA calibrations associated with the medium-level soil analyses of the samples in Case 0116/SDG01 were actually by low-level "water" calibrations. The CLP protocol requires that medium-level calibrations (containing additional methanol to stimulate sample analysis conditions) must be performed (SOW288, D-29). From an analytical viewpoint, although this is technically not consistent with the CLP protocols, this analysis may have actually been more appropriate using the low-level calibration. Since only a very small volume (20 μ l) of the methanol extract was utilized for analysis, the low-level water calibration appears to more closely simulate the sample analysis conditions.
- 5. A volatile, semivolatile, mirex and kepone matrix spike/matrix spike duplicate (MS/MSD) analysis was not performed on any of the 13 soil boring samples in the four sample delivery groups (SDGs) reviewed. In addition, the soil boring samples that were reviewed contained samples analyzed by low-level and medium-level protocol for volatile analysis. Accordingly, a VOA low-level and medium-level MS/MSD analysis should have been performed.
- 6. According to the raw data provided, the soil boring samples that were analyzed by "medium-level" protocol for volatile organics were not in accordance with the CLP protocol. Per the CLP protocol, 4 grams of sample is extracted with 10 ml of methanol and a portion of the methanol solution is then added to 5 ml of water and is subsequently purged (SOW288, D-27 to D-28). It appears that sample volumes ranging from 5 grams to 10 grams and volumes of methanol ranging from 5 ml to 10 ml were used for the analysis of the project samples included in this review.
- 7. The mirex and kepone fraction of samples 28-1-7-91-MS-SW1 and 29-1-7-91-MSD-SW1 were extracted 10 days beyond the 5-day SOP holding time from date of sample receipt. It appears that these samples were originally extracted within holding time but because



- they were not spiked, the laboratory reextracted and reanalyzed them with the proper spiking solution.
- 8. The percent difference for kepone was above the maximum percent difference criteria of 40% specified in the project-specific SOP for both the quantitation and confirmation clusters in the continuing calibration standard performed on 1/19/91 at 11:44 (associated with samples in Case 0116/SDG01 and Case 0116/SDG02). Positive results for kepone in samples 51-1-9-91-SB8-C and 53-1-10-91-SB5-A were quantitated using this noncompliant standard.
- 9. The instrument level of mirex in sample 50-1-9-91-SB8-B was observed to be in excess of the calibrated range. The laboratory diluted and reanalyzed the sample in accordance with the analysis SOP. However, once again the instrument level of mirex exceeded the calibration range. Accordingly, a second dilution should have been performed to properly quantitate the concentration of mirex in this sample.
- 10. The laboratory quantitated the result for kepone in sample 60-SB6-A using the quantitation ion cluster. However, the ion abundance ratio between the two most abundant ions in the quantitation ion cluster for kepone exceeded the QC limits. The ion abundance ratio between the two most abundant ions in the confirmation cluster for kepone were within QC limits. The laboratory should have then quantitated the result using the confirmation cluster per the site-specific SOP.

Comments

- 1. According to the case narrative, the pesticide/PCB fraction of samples 64-SB2-A and 67-FB were prepared in accordance with EPA CLP SOW590 rather than the requested EPA CLP SOW288. The pesticide/PCB fraction of these samples were canceled.
- 2. A secondary dilution was performed for the analysis of kepone and mirex in sample 50-1-9-91-SB8-B. The reported results for kepone and mirex in this sample have been flagged "*" on the data tables. The concentration of mirex obtained in the initial analysis of this sample resulted in instrument levels in excess of the calibration range. Accordingly, the C₁₃-mirex internal standard was diluted out, and additional C₁₃-mirex was added to the diluted extracts just prior to the GC/MS analysis at a concentration of $lng/\mu l$.
- 3. According to the Chain-of-Custody provided, sample 62-FB was requested to be analyzed for volatiles. However, it appears that the volatile analysis of this sample was not performed.



With regard to data usability, principal areas of concern include blank contamination, surrogate recoveries, matrix spike recoveries, calibrations and quantitation of positive results. Based upon a review of the data provided, the following data qualifiers are offered.

Data Qualifiers

Due to the trace level presence of methylene chloride, carbon disulfide, 2-butanone, total xylenes, chlorobenzene, toluene and ethylbenzene in the laboratory method blanks and/or field blanks and trip blanks, the reported presence of these compounds in the following samples is qualitatively questionable and have been flagged "B" on the data tables.

Compound	Applicable Samples
methylene chloride	27-1-7-91-SW1, 49-1-9-91-SB8-A, 53-1-10-91-SB5-A, 54-1-10-91-SB5-B, 57-SB3-A, 57-SB3-ADL, 58-SB3-B, 58-SB3-BDL, 59-SB3-C, 59-SB3-CDL1, 60-SB6-A, 61-SB6-B, 64-SB2-A, 65-SB2-B, 65-SB2-BDL and 66-SB2-C
carbon disulfide	30-1-7-91-SW2, 31-1-7-91-SW6, 33-1-7-91-SW3 and 34-1-7-91-SW5
2-butanone	53-1-10-91-SB5-A, 54-1-10-91-SB5-B, 57-SB3-A, 57-SB3-ADL, 58-SB3-B, 58-SB3-BDL, 59-SB3-C, 59-SB3-CDL1, 60-SB6-A, 64-SB2-A, 65-SB2-B and 66-SB2-C
chlorobenzene	54-1-10-91-SB5-B
toluene	58-SB3-B and 58-SB3-BDL
ethylbenzene	58-SB3-B, 58-SB3-BDL and 60-SB6-A
total xylenes	60-SB6-A

Although the results for carbon disulfide in sample 34-1-7-91-SW5, for methylene chloride and 2-butanone in samples 57-SB3-A, 57-SB3-ADL, 58-SB3-B, 58-SB3-BDL, 59-SB3-C, 59-SB3-CDL1, 60-SB6-A, 64-SB2-A, 65-SB2-B, 65-SB2-BDL and 66-SB2-C, for toluene in samples 58-SB3-B and 58-SB3-BDL, for ethylbenzene in samples 58-SB3-B, 58-SB3-BDL and 60-SB6-A and for total xylenes in sample 60-SB6-A appear to be substantial, these results actually represent trace level instrument levels multiplied by large dilution factors. : 2





- Although the reported results for toluene and ethylbenzene in sample 57-SB3-ADL and for total xylenes in samples 57-SB3-ADL and 58-SB3-BDL are at concentrations that can be questioned by the blanks, the reviewer has not qualified these results with a "B". The concentrations of these compounds in the initial analyses of the aforementioned samples were substantial enough that they could <u>not</u> be qualitatively questioned.
- Although there is no direct reason to quantitatively question the presence of acetone in samples 34-1-7-91-SW5, 49-1-9-91-SB8-A, 50-1-9-91-SB8-B, 51-1-9-91-SB8-C, 53-1-10-91-SB5-A, 53-1-10-91-SB5-B, 57-SB3-A, 57-SB3-ADL, 58-SB3-B, 59-SB3-C and 61-SB6-B and carbon disulfide in samples 53-1-10-91-SB5-A and 54-1-10-91-SB5-B, these results should be used with caution. Acetone and carbon disulfide are common laboratory contaminants.
- Trace-level concentrations of mirex were detected in field blank sample 62-FB, associated with samples 57-SB3-A, 58-SB3-B, 59-SB3-C, 60-SB6-A and 61-SB6-B (and their dilution analyses.) The detection of mirex in this field blank was not at sufficient concentration to qualitatively question any of the associated sample results.
- The analysis for all VOA compounds reported as "not-detected" in samples 57-SB3-ADL, 58-SB3-BDL, 59-SB3-CDL1, 64-SB2-A and 65-SB2-B should be considered unreliable and has been flagged "R" on the data tables. Similarly, positive results for volatile compounds in these samples should be considered estimated and have been flagged "J" on the data tables. Very low recoveries were obtained for all three volatile surrogate compounds in these samples.
- The analysis for 4-nitroaniline in sample 67-FB is unreliable and has been flagged "R" on the data tables. A low response factor was obtained for 4-nitroaniline in the associated calibration standard.
- The analysis for all VOA compounds reported as "not detected" in samples 67-FB and 68-TB is unreliable and has been flagged "R" on the data tables. Similarly, the positive results for methylene chloride in these two samples should be considered estimated and has been flagged "J" on the data table. According to the case narrative, the VOA sample vials for these samples contained headspace.
- The actual detection limits for all VOA compounds in samples 49-1-9-91-SB8-A, 50-1-9-91-SB8-B, 51-1-9-91-SB8-C, 57-SB3-A, 58-SB3-B, 59-SB3-C and 60-SB6-A may be higher than reported and have been flagged "UL" on the data tables. Similarly. positive results for volatile compounds in these samples should be considered estimated and have been flagged "J" on the data tables. Low recoveries were obtained for all three volatile surrogate compounds in these samples.



- The results for kepone (6.35 μ g/Kg) and for mirex (3.05 μ g/Kg) in sample 54-1-10-91-SB5-B have been added to the data tables. Examination of the raw data revealed that kepone and mirex are confidently present in this sample (all qualitative ion ratio criteria were met for this sample for the quantitation as well as the confirmation cluster).
- The reported results for the compounds in the following samples should be considered estimated and have been flagged "J" on the data tables. The instrument levels that these results were based on were in excess of the calibrated range.

	Compound	Applicable Samples
ORIGINAL MODI	toluene	57-SB3-A, 59-SB3-C, 59-SB3-CDL1 and 65-SB2-B
	total xylenes	58-SB3-B, 59-SB3-C and 59-SB3-CDL1
	ethylbenzene	59-SB3-C and 59-SB3-CDL1
	1,1,2,2-tetrachloroethane	59-SB3-C
	trichloroethene	59-SB3-C
	mirex	50-1-9-91-SB8-B

The results for the compounds in the following samples should be considered estimated and have been flagged "J" on the data tables. High percent differences were obtained between the response factors used to quantitate these results and the average response factors obtained from the initial multi-point calibrations.

Compound	Applicable Samples
acetone	49-1-9-91-SB8-A, 50-1-9-91-SB8-B, 51-1-9-91-SB8-C and 57-SB3-ADL
kepone	53-1-10-91-SB5-A and 51-1-9-91-SB8-C

The positive results for mirex in samples 32-1-7-91-SW4 and 62-BB and 56 kepone in samples 59-SB3-C and 51-1-9-91-SB8-C should be considered estimated and have been





flagged "J" on the data tables. The relative ion abundance ratios for the two most abundant ions in the quantitation ion clusters exceeded the QC limits for the aforementioned compounds in these samples. It should be noted that the relative ion abundance ratios for the two most abundant ions in the confirmation ion clusters also exceeded OC limits.

- The positive result for kepone in sample 51-1-9-91-SB8-C should be considered estimated and has been flagged "J" on the data tables. This result is estimated due to an interference.
- The reported result for kepone in sample 60-SB6-A has been changed on the data tables. The laboratory quantitated the result for kepone (0.584 μ g/Kg) using the quantitation ion cluster, yet the ion abundance ratio for the quantitation ion cluster for kepone exceeded QC limits. The reviewer calculated the result for kepone in this sample using the confirmation ion cluster (the ion abundance ratio was within QC limits for the confirmation ion cluster) to be 5.92 μ g/Kg. Taking the worst-case scenario, the reviewer has opted to report the higher of the two values.
- The actual detection limit for toluene in sample 27-1-7-91-SW1 may be higher than reported and has been flagged "UL" on the data tables. A slightly low recovery was obtained for toluene in the associated matrix spike duplicate sample.
- The reported result for N-nitrosodiphenylamine in sample 64-SB2-A should be used with caution. Although not detected in any of the blanks associated with this sample, this compound has been known to be a historical contaminant at this laboratory. In addition, the result for N-nitrosodiphenylamine actually represents the total of diphenylamine and N-nitrosodiphenylamine. The analysis performed on this sample is not capable of distinguishing between the two compounds.
- The laboratory reported results for the compound in the following samples with the following qualifiers. The reviewer agrees with the laboratory's qualifications.

Sample	Compound	Qualification
32-1-7-91-SW4	mirex	x,y,z
34-1-7-91-SW5	mirex	x,y
50-1-9-91-SB8-B	mirex	E
51-1-9-91-SB8-C	kepone	F,x,z
53-1-10-91-SB5-A	kepone	AR30,2568



Sample	Compound	Qualification
57-SB3-A	mirex	у
58-SB3-B	mirex	x,y
59-SB3-C	kepone	x,z
60-SB6-A	kepone	y,z
62-FB	mirex	x,y,z
65-SB2-B	mirex	y

ORIGINAL O

NOTES:

- z Presence of the compound is strongly indicated, but the ion abundance ratio criteria are not met for the quantitation cluster ions.
- x Presence of the compound is strongly indicated, but the ion abundance ratio criteria are not met for the confirmation cluster ions.
- y Presence of the compound is strongly indicated, but not all specified ions in the clusters are present.
- k Quantitation done using confirmation cluster ions.
- F Reported value estimated due to an interference.
- E Exceeded the calibration range.
- Tentatively Identified Compounds (TICs) for the VOA and BNA analyses performed have been evaluated and are presented on the data tables. The majority of the TICs appear to be unknowns, alkylbenzenes, alkanes and laboratory artifacts.
- Per CLP protocols, all results reported below the quantitation limits should be considered estimated and have been flagged "J" on the data tables.

A complete support documentation of this quality assurance review is presented in Section 3 of this report.

B. Conclusions

This quality assurance review has identified aspects of the analytical data that have required qualification. The majority of the data appear to be acceptable for use. However, the volatile analyses of a few samples are unreliable or biased low due to poor surrogate recoveries. In addition, a few results should be considered estimated due to various QC results. To confidently use any of the analytical results from the data sets examined, the data users should understand the qualifications and limitations stated in this report.

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Date: 3/19/91



SECTION 2

ANALYTICAL RESULTS

SML Environmental Services Sample Number Haboratory File Number	ample Kumber		76 1 77 1 18 178 197	19.48.41 27 1 7 91 SM	76 7 19 27 1 29 24 120 121 131 121 131	7984-86	32-1 -7 91 SUA 1980-04	FIS SE	34 1-7-91-545 7584-05	36-1 7-91-18	13 1381-15 1381 16-1 131-16 138-1-15 138-1-18 138-18	29 1-7 91-850 7980-01850
Remarks	;		Field Blank	!	:					Trip Slank		
Units			Mg/L	yba	щÁ	1/64	ug/l	ng/t	ug/I	=	ug/L	1/60
VOLATILE COMPOUNDS	Quantitation[Quantitation Limit (Aq) Limit (Sol)	Quantitation limit (Sol)		- !								
Chloromethane	=	=										
Bromome thane	=	=										
Vinyl Chloride	=	=					31 J					
Chloroethame	=	=										
Methylene Chloride	5	5		=						=		
Acetone	A.S.	=							1740			
Carbon Disulfide		5	21		ŝ	10.0	****	23 8	3	5		
1,1-Bichlereethene	5										s	s
1,1-Bichloroethame	5	ۍ.										
1,2-Dichloroethene (total)	ۍ.	5					15					
Chlereform	5	5										
1,2-Bichloroethane	5	5-			X							
2-Butamene	=	=										
1,1,1-Tricklereethame	5	5	•			A						
Carbon Tetrachloride	٠,	5		Nage of the last o			j	1				
Vinyl Acetate	=	=						•				
Brogedichlerone thane	5	5				-			i		7	
1,1,2,2-Tetracklereetkame	5	5			3.3		3		£ 63		1	
1,2-Bichloropropane	5	2										
trans-1,3-Bichloropropene	55											
Trichlorgetheme	2	5					.				s	s
Dibromochloromethame	No.	5										
1,1,2-Trichloroethame	5											
Benzene	<u> </u>	<i>-</i>					<u>.</u>				^	^

ORIGINAL ORIGINAL

- SELTER MINTER THEFTA	STREET TRYLLINGS											#
₹ i			%-1-%-H ₂	7-1-1-91-9m	# 1-1-W-19	# # ·	12-1-1-18-MM	13-1-1-11-111	M-11-11-18		1 1 1 1 1 1 1 1 1 1	29-1-7-94-488-55
			2	£	<u> </u>		8	<u>.</u>	<u> </u>		<u> </u>	2
WALATTLE COMPNIESS		bentitation bantitation										
	•	•										
	=	=										
prings Colorido	=	=			·		=					
(Characters	#	=										
Brilgian Charles	•	•		=						ш		
Bootings	E	×										
Karbon Okopišijan	•	•	*		=	#		18		n.		
1_1 dictions these	•	•										•
L.I-Mahowather	-	•										
[1,2-Hicherothern (tetal)	•	•					•					
Chlorofoss	-	•										
1,2-tidleredae	•	•										
2- Belonne	*	*										
1.1.3-brishmothus	•	•										
Carbon Tetrezhioriek	•	•										
Magi fastata	•	*										
ومناعب مثالات	•	-										-
1,1,2,2-Tetradianation	•	•			E		2		83			
1.2-tidbergrapus	•	•										
brass 1,3-tiddargregum	•	•										
Tridderection	-	-					E				\$	•
جساني بولاي دولاي	•	_										
H.1,2 brickingstime	-	_										
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MATERIAL SERVICE SERVICES	MATTICAL MESALES	KSE.75										14.
NE Conformation 5 Reducedary file States	¥.		A-1-1-31-10	798-4	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	78-8	201-1-1-11-11	7944-40		# 1 to 1 to 1	730-005	415 1 198-4151 415-11-11-11-11-11-11-11-11-11-11-11-11-1
]				j							
Î	-	•	<u>.</u>	2	*	4	4	4	4	4	9.	*
	£ [ires trep i fed temp	1									
cis-1,3-86diarquepe	-	-										
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+ Sallyi - 2 Australia	*	•										
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مستدا	-	•		-	Ξ		Œ		72		8	
Ciurium.	•	-							2		1	•
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Styrene	-	\$										
tylem (tetal)	•						*		81			
etitetim tlait faltipler	4.		5	5	5	E	£	5	3.6	1.00	1.88	Ş
helm of Sample Collection			ac,esq'sa	M.feefts	al festiva	m.feafra	arjestus a	ni,jenju	a1,000/11	ar justin	er festje	
hate Sample Americal by Laboratory	Areas		nctual 10	Tafestra	sejesta	arjesta	artestra	schafte	sc/ess/ss	M/cs/rs	as/an/as	najem/m
nto of Sagle Bedysis			ar/m/m	m/III/m	m/tt/m	m/tt/m	matropa	artitra	afinfa	nefrafan	es/ps/ps	majrudju
spiritum say prog summapor	•		1	I	Ž.	S	:	1	2	3	•	
							-					

Describite count: - Compand may or may not be present to this marks.
 It is empound one act detected, but the quantization bladt to probably before the to a law blan blanchiful during the quality numerous review.
 This result to qualitationly unpact clear this compand was detected in field endfor behaviory blanks at challer hands.
 Shirtin spike compand.

REMAINS THE PROPERTY CANNAGES - ESCHAFE CHICEFINITES				-		-				# # #
SE Environmetal Services Supie Burker Scherotory file Burker	184-14-1-81 184-14-1-1-81	18-48-4-12	740-44 774-1-12 27-1-1-28 28 1-1-1-1-28 28 1-1-1-1-28 28 1-1-1-1-28 28 1-1-1-1-28 28 1-1-1	20 - 11 - 12 - 13 - 13 - 13 - 13 - 13 - 13	32-4-7-3E-3E	19-484 18-14-1-41	7-2-1-11-26 (5-1-1-11-11-11-11-11-11-11-11-11-11-11-1		_ 8	129-1-1-15-15-15-15-15-15-15-15-15-15-15-15
	Field Blank									
	Ļ	4	Š	4	1	4	*	\$	3	1
Surren							- -			
MARILE CHEMISTS		•		•	•	-	,	•]		
MILLS: - Companied was not defected.			-		•	•				•

EXTRACTABLE ORGANIC ANALYSES ANALYTIC	MALTICAL RESULTS	_		-		_		_	-		- page 4
SRC Environmental Services Sample Humber Laboratory File Number		7988-97	756-1-7-91-88 77-1-7-91-941 34-1-7-91-942 31-1-7-91-946 32-1-7-91-944 33-1-7-91-943 34-1-7-91-946 35-1-7-91-94 33-1-7-91-943 35-1-7-91-946	34-1-7-91-SU2 7984-62	31-1-7-91-SM6 1984-86	32-1-7-91-544 79 81-1 4	33-1-7-91-543 79 08-8 3	34-1-7-91-Sus 7584-85	36-1-7-91-TB	-1-7-91-18 28-1-7-91-85-581 29-1-7-91-858-581 7588-88 7588-8185 7588-91858	29-1- <i>1-9</i> 1-NSD 7990-01NSD
Remarks	- = -	Field Blank							Trip Blank		
thits		mg/L	- FE	1/9/1	1/90	ηβα	1/64	1/64	S	1)fm	1/64
VOLATILE COMPOUNDS NAV	Reporting										
Kepone	1.132					9.939			*	s	s
Kirex	9.00544					9.99829 J		1.0452	2	s	s
Quantitation limit Multiplier		3	1.3	1.	1,#	1.3	:- *	1.#	3	1.88	1.8
Date of Sample Collection		01/07/51	01/07/51	01/07/51	01/07/91	01/07/91	91/97/91	91/97/91	正	01/07/91	01/07/51
Date Sample Received by Laboratory		01/05/51	01/69/51	01/89/51	01/09/51	16/64/10	01/09/91	01/09/51	¥	11/09/51	01/05/51
Date Sample Extracted		01/11/91	01/11/91	91/11/91	01/11/91	01/11/91	01/11/91	1/11/91	#	01/11 & 01/24	81/11 6 81/24
Date of Sample Amalysis		e1/23/91	01/23/51	#1/23/91	01/23/91	8 1/23/91	91/23/91	01/23/91	#	01/25/91	11/25/11
Instrument Used for Analysis		15-53	#S-S3	#S-53	85-S3	NS-S3	NS-53	HS-53	F	#S-S3	15 -53
						-	-				

NOTES: - Composed was not detected.

J quantitation is approximate due to limitations identified during the quality assurance review (data validation).

R Unreliable result - Composed may or may not be present in this sample.

Willis composed was not detected, but the quantitation limit is probably higher due to a law bias identified during the quality assurance review.

B This result is qualitatively suspect since this composed was detected in field and/or laboratory blanks at similar levels.

S Natrix spike composed.

SMC Environmental Services Somple Mumber Laboratory Sample Mumber	emple Mumber		49-1-9-91-588-A 7583-91	50-1-9-91-588-8 7583-82	49-1-9-91-588-8 58-1-9-91-588-8 51-1-9-91-588-C 48-1-9-91-588-F8 52-1-9-91-T8 7983-61 7983-62 7983-83 7983-64 7983-85	(8-1-9-91-588-FB 7983-64	52-1-9-91- 7983-85
Remarks	, a					Field Blank	Trip Blank
mits OF Rec	Roo		ug/Kg	F3/64	51/5s	1/94	E
VOLATILE COMPOUNDS	ntitation mit (Aq)	Quantitation Limit (Sol)					
Chloromethane	=	=	25	=	5		1
Bromome thane	**	:=	5	=	95		
Vinyl Chloride	=	=	Ę	3	#		
Chloraethane	=	=	Æ	=	55		
Methylene Chloride	5	5	130 8	=	5	2.1	3.1
Acetome	=	=	11,48 1	18,688 3	22,880 3		Ī
Carbon Disulfide	5	ۍ	5	=	=		5
1,1-Dichloreethene	~	J.	2	2	5		
1,1-Bichloreethame	5	5	5	5	5		1
Total 1,2-Bichloroetheme	5	ۍ.	170 3	=	5		
Chloroform	5	5	æ	F	£		
1,2-Bicklereethame	s.	es.	7	\$	#1		
2-висанопе	=	=	5	5	g.		
1,1,1-Trichlereethame	5	5	=	9	3		
Carbon Tetrachloride	5	51	2	25	9		
Visyl Acetate	15	=	2	Ħ	25		
Branedicklerenethane	S	ر. در	55	8 2	Ø		
1,1,2,2-Tetrachiorsethame	5	у,	359 J	35,110 J	19,846 J		
1,2-Bichleropropame	5	<i>ح</i>	\$	5	g		
trans-1,3-Bichlerepropeme	S.	<i>5</i>	£	5 *	#		
Trichlormetheme	55	5	148.2	2840 3	420 J		
Bibromechloromethame	ۍ	۳.	Æ	#	g		i
1,1,2-Trichlorsethane	5	ۍ	g	5	*		
		.			5		Ì

VOLATILE ORGANIC ANALYSIS -	WALLALICUT KERATLE	,	ALL SOLIOS REPORTED ON A DRY WEIGHT BASIS	B DAY A DRY WE ISH	BASIS		-page 6
SMC Environmental Services Sample Momber Laboratory Sample Momber	maple Number		49-1-9-91-588-A 7983-01	59-1-9-91-588-8 7983-82	51-1-9-91-588-£	49-1-9-91-588-A 54-1-9-91-588-B 51-1-9-91-588-C 48-1-9-91-588-F8 52-1-9-91-T8 7983-01 7983-02 7583-43 7583-44 7583-85	52-1-9-91 7983-#5
Remarks						Field Blank	Trip Black
wits .	K		fi)/fin	mg/Kg	eg/Kg	ug/l	ng/l
SOMBOMBO 3111VIOA	OR Chimit (M)	Quantitation limit (Sel)					-
cis-1,3-Dichloropropene	5	5	P.	æ	#		
Bromoform	5 1	٠.	Æ	=	æ		
2-Nexamone	1#	=	Æ	s	#		
f-Nethyl-2-Pentamone	14	=	Д	s s	s		
Tetrachloroethene	5	5	ş	2190 3	g		
Toluene	5	ۍ.	Ę	E 468	191 J		
Chlorobenzeme	ş	<i>ح</i>	Я	Ħ	=		
Ethylbenzene	55	5	Ħ	1984 1	271 J		
Styrene	5	5	Æ	щ	Œ		
Iotal Xylenes	5	5	£ 65)	16,144 J	¥ .		T
Quantitation Limit Wultiplier	,	•	62.0	3	5	3	
Wate of Sample Collection			1/9/91	1/9/91	1/9/91	1/9/91	1/9/91
Bate Sample Received by Laboratory	atory		1/10/51	1/10/91	1/10/91	1/10/51	1/10/51
Date of Sample Analysis			1/15/91	1/13/91	1/13/91	1/11/91	1/11/91
			5	5	ş S	- N N3	EV-51

I This result is qualitatively suspect since this compound was detected in field and/or laboratory blank at similar levels.

I thereliable result — Compound may or may not be present in this sample.

J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).

If this compound was not detected, but the quantitation limit is probably higher due to low bias identified during the quality assurance review.

S Matrix spike compound.

M Not analyzed.

TENTATIVELY IDENTIFIED COMPOUNDS - ESTIMATED CONCENTRATIONS	Z#BTT#S	-	-	_	-page 7
SM Environmental Services Sample Mumber	49-1-9-91-588-4	54-1-9-91-588-8	51-1-9-91-S88-C	49-1-9-91-588-4 54-1-9-91-588-8 51-1-9-91-588-0 48-1-9-91-588-8 52-1-9-91-18	52-1-9-9
liaboratory Sample Kumber	7583-91	7983-91 7983-92	7983-#3	7983-84 7983-85	7983-9
Remarks				Field Blank	Trip Blank
wits GINA	by/bn	ng/Kg	nā/Kā	pg/1	1/64
VBLNTILE COMPONENTS OF PE	1		,	t	-
Barrs:	MOTEC: - Commound was not detected				

B This result is qualitatively suspect since this compound was detected in field and/or laboratory blank at similar levels.

R bureliable result - Compound may or may not be present in this sample.

J buantitation is approximate due to limitations identified during the quality assurance review (data validation).

BI This compound was not detected, but the quantiation limit is probably higher due to low bias identified during the quality assurance review.

S Matrix spike compound.

NA Net detected.

EXIMACIABLE UNGAMIC AMMETSES -	CLINCAR NUTLLINUM	C 110C3W 2	The contract of the second contract of the se				
SMC Environmental Services Sample Number Labaratory Sample Number	le Humber		49-1-9-91-SR8-A 7983-81	59-1-9-91-588-8 7583-92	51-1-9-91-SB8-C	49-1-9-91-588-4 54-1-9-91-588-8 51-1-9-91-588-0 48-1-9-91-588-68 52-1-9-91-18 7943-41 7943-42 7943-43 7943-44 7943-45	52-1-9-91- 7 983-0 5
Remarks						Field Blank	Trip Blank
Make Make		-	pg/Kg	e3/Kg	ré/Ké	1/64	ug/1
WHATTHE COMPANY OF THE PARTY IN	Reporting Limit (Aq)	Reporting Limit (Sal)					
Kepone	*.132	\$8.4		326¶ J*	5.52 1		#
Mirex	1.4844	18.5	62.6	42,3 00 J*	34.1		#
¶uamtitatiom limit Multiplier		-	1.18	256	1.14	1.#	s
Date of Sample Collection			1/9/51	1/9/91	1/9/91	1/9/91	2
Date Sample Received by Laboratory	K)		1/10/91	1/10/91	1/10/91	1/10/91	3
Date Sample Extracted			1/10/91	1/14/91	1/19/91	1/11/91	#
			1/19/91	1/23/91	1/19/91	1/23/91	¥
Bate of Sample Analysis			R CT	IC CO	25-S3	₹.53	*

E This result is qualitatively suspect since this compound was detected in field and/or laboratory blank at similar levels.

B This result is qualitatively suspect since this compound was detected in field and/or laboratory blank at similar levels.

B This result is operatively suspect was not be present in this sample.

I this compound was not detected, but the quantiation limit is probably higher due to low bias identified during the quality assurance review.

I this compound was not detected, but the quantiation limit is probably higher due to low bias identified during the quality assurance review.

I this compound was not detected, but the quantiation limit is probably higher due to low bias identified during the quality assurance review.

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I this compound was not detected, but the quantiation limit is probably higher due to low bias identified during the quality assurance review.

I this compound was not detected, but the quantiation limit is probably higher due to low bias identified during the quality assurance review.

Remarks Whatts Whatt	Quantitation	Quantitation Quantitation Limit (Aq) Limit (Sol) 18 18	55-1-18-91-585-8 55-1-18-91-78 56-1-18-91-78 7994-81 7994-82 7994-83 7994-84 Trip Blank ug/Kg ug/Kg ug/Kg ug/Kg ug/Kg ug/K ug/K	54-1-1	14-91-585-8 7994-82 14-91-88
Gromome thane	= =	= =		. T -	17
Chlereethame	=	=		T	
Nethylene Chloride	5.	5.2	ш.		2
Acetone	=	=	38.1		£ 1
Carbon Disulfide	5.1	5.	32		1
1,1-Bichloraetheme	5.1	5.1			
1,1-Bichlorgethame	5.1	5.1			
 1,2-Bickloroetheme (total)	. <u>.</u>	5.4			37
Chlereform	5.1	5.0			3 J
1,2-Bichloreethame	5.1	5.0			
2-Butanome	15	15	24 B	7	7 8
	5.4	5:80			
Carbon Tetrachloride	55	5.1			
Vinyl Acetate	=	=			
Broadich loroue thave	2	5.1			
1,1,2,2-Tetrackleroetkame	5.0	5.8			
1,2-Bichloropropame	5.1	5.4			
trans-1,3-Bichloropropene	5.0	5.4			
Trickleroethene	5.1	5.1			2
Dibrocochloresethane	, •	л •			
	"	-			
1,1,2-Trickloroethane	<u>د</u> ع	5.4			

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SMC Environmental Services Sample Mumber Laboratory File Mumber	esple Humber		53-1-10-91-585-A 7994-01	53-1-18-91-585-8 54-1-18-91-585-8 55-1-18-91-78 55-1-18-91-78 7594-81 7594-84 7594-84 7594-84	55-1-1 0 -91-F8 7994 -8 3	56-1-10-91 7994-04
Remarks						
wits GINA	a)	SINA,	63/6a	63/6n	ug/l	1/64
VOLATILE COMPOUNDS OF PE	Quantitation Limit (Aq)	Quantitation Limit (Sol)				
cis-1,3-Dichleropropene	1. 2	5.1				
Bromoform	5.1	5.0				
2-Nexanone	15	=				
4-Nethyl-2-Pentamene	15	15				
Tetrachloroetheme	5.0	5.				
Toluene	5.8			=	_	
Chlerobenzene		5.0	6.3	= =		
	5.1	5.2		# = =	21	
Ethylbenzene	5.8	5.		3 2 2		
Ethylbenzene Styrene	5.4	5. 5. 5. 5. 5. 5. 6		3 2 2		
Ethylbenzene Styrene Xylene (total)	5.1	2 2 2 2 2		- 3 = = =		
Ethylbenzene Styrene Xylene (total) Quamtitation Limit Hultiplie		2 2 2 2 2		: - s : = =		g
Ethylbenzeme Styrene Stylene (total) Quantitation Limit Hultiplie		2 2 2 2	8.5 8.7	9 9 11 11	2.3	1.88
Ethylbenzene Styrene Styrene (total) Apamtitation limit Hultiplie Date of Sample Cellection Date Sample Received by Labo	5.8 5.8 5.8 5.0		01/11/91 01/10/91 5.8 2.3	0/10/91 1.3 1.3 1.3 1.3	2.3	1/11/9
Styrene Styrene Xylene (total) Quantitation limit Heltiplier Rate of Sample Collection Bate Sample Received by Laboratory	5.0 5.0 5.0 5.0		01/15/91 01/11/91 5.8	11 10 11 11 11 11 11 11 11 11 11 11 11 1	2 3 1.00	01/11/91

B This result is qualitatively suspect since this compound use detected in field and/or laboratory blanks at similar levels.

R threliable result - Compound may or may not present in this sample.

J quantitation is approximate due to limitations identified during the quality assurance review (data validation).

M This compound was not detected, but the quantitation limit is probably higher due to a low bias idnetified during the quality assurance review.

TENTATIVELY IDENTIFIED COMPONWOS - ESTIMATED CONCENTRATIONS	MIRATIONS		- 1	-page 11
SMC Environmental Services Sample Member Laboratory File Nomber	53-1-18-91-585-8 54-1-18-91-585-8 55-1-18-91-18 56-1-18-91-18 7994-81 7994-82 7994-83 7994-84	54-1-19-91-585-B 7994-92	55-1-18-91 F8 7994-83	7994-84
Remarks				
wits GNA	ey/fen	nd/Kd	1/64	uq/L
COMPOUNDS OF A				
VOLATILE COMPONENTS		,	,	,
furam, tetramydro-	810 J			

MATES:

- Compound was not detected.

B This result is qualitatively suspect since this compound was detected in field and/or laboratory blanks at similar levels.

B bireliable result - Compound may or may not present in this sample.

J quantitation is approximate due to limitations identified during the quality assurance review (data validation).

BI This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

SMC Environmental Serv Laboratory File Mumber	SMC Environmental Services Sample Number Laboratory File Houwber		53-1-1 1- 91-585-1	53-1-18-91-585-8 54-1-18-91-585-8 55-1-18-91-78 56-1-18-91-78 7994-81 7994-81 7994-84 7994-84	55-1-1 1- 51-f8	56-1-18-91 7991-84
Remarks					Field Blank	Trip Blank
Units	MAL	-	by/fin	pg/kg	##/	uq/L
COMPOUNDS	CA Reporting Limit (Mg)	Reporting limit (Sol)				
Кероне	1.1132	68.9	5.91 3	6.35 J		5
Нігех	1.9544	18.5		3.86 1		¥
Quantitation limit Hultiplier	Multiplier		1.26	1.33	. .	#
Bate of Sample Collection	ection		91/19/91	11/10/51	11/10/51	
Date Sample Received by Laboratory	d by laboratory		81/11/91	11/11/91	01/11/91	*
Date Sammle Extracted	I .			24 /12/24	01/14/91	
ners strange aven	rsis		01/14/91	1 41/14/21		#
Date of Sample Amalysis	,		81/19/91	01/19/91	81/15/51	= =

It is result is qualitatively suspect since this compound use detected in field and/or laboratory blanks at similar levels.

R threeliable result - Compound may or may met present in this sample.

J quantitation is approximate due to limitations identified during the quality assurance review (data validation).

W This compound was mot detected, but the quantitation limit is probably higher due to a low bias idmetified during the quality assurance review.

MA Not analyzed.

SMC Environmental Services Sample Number Laboratory File Number	ample Humber		57 -583-A 8916-#1	57 S83-ABL	58-583-8 8016-02	58 583-801 8#16-#201	59-583-€ 8016-03	59-583-CDL1	59-583-CDL1 59-583-CDL2	8416-84 8416-84	61 S86 B	63-TB 8016-07	62-F8
earts / W				Dilution		Bilution		Dilution	Pilutien			Trip Blank	Field Black
aits Picin	-		ug/Kg	by/64	ug/Kg	ug/Kg	ey/kg	pg/Kg	pg/Kg	ug/kg	hy/ka	1/pa	5
VOLATILE COMPOUNDS Qu	Quantitation Limit (Aq)	Quantitation Limit (Sol)					·						
Chleromethame	=	=	92	**	55	~	2			=			.
Brespethage	#	=	æ	30	笼	19	Æ	240		æ			
Vinyl Chloride	=	=	æ	~	5	24	Æ	=		s			=
Chloreethame	=	=	=	~	Ħ	**	5	-		s			.
Methylene Chloride	5.0	5.4	559 8	26 111 8	750 8	1 1465	840 =	13,44 8		•	H .	£ 3	
Acetome	=	=	16## J	939 J	2 989 J	36	23 88 J	247		#	=		M :
Carbon Disulfide	5.0	5.0	75	-	F	**	5	3803		s			
1,1-Dichlergethene	5.0	5.1	#		\$	*	舞	20		2			E
1,1-Dichloreethame	5.4	5.4	Œ		18	-	\$	~		5			
1,2-Bichloroetheme (total)	5.2	5.	38 4 J	C 682	r 488	599.3	34 11 J	1599 J			5 J		=
Chlereform	5.4	5.	5 E	-	75	**	Æ	70		2	19		
1,2—Bichlereethame	5.4	5.1	92		Æ	=	Æ	-		5			.
2-Bitaneme	16	19	299 8	2## 8	(3) I	1 5## B	239 8	29## 8		254 1	9.1		3
1,1,1-Tricklorgethame	5.0	5.0	Æ	240	16	~	\$	~		s			
Carbon Tetrachleride	5.4	5.0	Æ	*	#	-	2	-		S			E
Vimyl Acetate	10	#	#	-	1 2	~	,5	=		5			
Bromodichlorome thane	5.0	5.	æ	=	5	**	25	-		,			 e
1,1,2,2-Tetrachlereethame	6. 5	5.0	749.3	51 0 J	170 J	145	17,000 3	12,000 J		2			F
1,2-Bichleropropane	5.4	. <u>.</u>	ş	-	5	~	5	~		#			
trans-1,3-Bichloropropess	5.0	5.0	Ħ	-	8 4	-	#	-		2			#
Trichloreetheme	5.0	5.4	449 3	341	1314 1	1990 3	19 ,000 J	16, 840 J	z,,,,	r 452	鉄		5
Dibrosochlorosethane	5.9	5.4	Æ	*	ē	~	箑	249		5			
1,1,2-Tricklereethame	5.4	5.1	25	-	۵ſ	~	2 949 J	~		a			#
			=	•	134	-	1	34		=			

SMC Environmental Services Sample Number Laboratory File Number	ample Humber		57-SB3-A B016-01	57-583-ADL	58-583-8 8916-92	58-583-80L	59-583-C		59-583-CBL1 59-583-CBL2 8016-03512	#1-918-# #-388-#	91-314-18	63-18 1416-17	\$2-F8
Resurks				Dilution		Dilution	1	Dilution	Dilution			Trip Blank Field Blan	FI
White Property			nd/Ki	βχ/δη	By/Ke	ng/Kg	PA/Kg	ex/for	b)/ba	ag/Kg	eg/kg	seq/L	uq/L
VOLATILE COMPOSIMOS	Quantitation Limit (Aq)	Obsartitation Quantitation Limit (Aq) Limit (Sol)											
cis-1,3-Dichloropropene	5.0	5.4	#	70	5	20	=	74		ş			
Bromoform	5.4	5.4	2	>0	5	*	5	200		5			
2-Нехапоне	=	=	æ	70	=	3986	#	74		E			
4-Nethyl-2-Pentamone	=	=	2 2	75	=	=	=	=		=			
Tetrachlereetheme	5.0	5.1	5	~	3	-	6,000 3	61 96 J		1 6 J	17		
Toluene	5.0	5.0	16,000 3	12,000 J	33,400 8	28,860 8	100,000 3	37 0,000 J	760,38	r 1811	11		
Chlorobenzene	5.4	5.5	#	24	2	349	i E	396 7		#			
Ethylbenzene	5.1	5.4	2440 3	15#1 J	5694 #	5214 1	77, 888 J	160,000 3	270,000		ær.		
Styrene	5.0	5.0	#	20	1#8 J	20	=	,		Æ			
Xyleme (total)	5.0	5.0	f 86 56	75## 3	26,100 J	Z3,840 J	170,000 3	588,868 3	1,396,668	7294 8	¥		
Quantitation limit Hultiplier	7		7.38	150	32	35	111.0	77e	7788	¥	1.28	1.3	
Bate of Sample Collection			01/15/91	01/15/91	81/15/91	91/15/91	81/15/91	81/15/91	01/15/91	01/15/91	91/15/91	01/15/91	
Bate Sample Received by Laboratory	ratory		01/16/91	01/16/91	01/16/91	n/16/91	01/16/91	01/16/91	01/16/91	01/16/91	01/16/91	01/16/91	
Date of Sample Awalysis			01/23/91	01/23/91	11/23/91	11/23/91	01/23/91	11/23/91	01/26/91	11/23/51	91/22/91	81/21/91	
			HS-V2	IIS-42	#5-¥2	25-25	15-Y2	15-¥2	IIS-¥2	K-51	NS-42	3	7

J Quantitation is approximate due to limitations identified during the quality control review (data validation).
R Moreliable result - Compound may or may not be present in this sample.
WI This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
In this result is qualitatively suspect since this compound was detected in field and/or laboratory blanks at similar levels.
NA Not analyzed.

TENTATIVELY IBENTIFIED COMPOUNDS - ESTINATED CONCENTRATIONS	RATIONS	-		•	-	•	-	-	-	_	-page 15
SMX Environmental Services Sample Mumber Laboratory File Mumber	57-583-A 8816-81	57-583-A 57-583-ADL 8#16-#10L	58-583-8 58-583-804 \$816-82 8816-9781	58-583-8 58-583-801 8816-82 8816-8281	59-583-E	\$9-\$83-C 59-\$83-CD11 59-\$83-CD12 8816-83012	59-583-C 59-583-CD11 59-583-CD12 8816-83812	69-586-A 8816-64	61-586-8 8816-85	63-18 \$416-47	62-F8 \$616- 6 6
Remarks	1	Bilution		Dilutien		Dilution	Dilution			Trip Blank Field Blank	Field Bla
Mits 4	by/64	ng/Kg	ne /Ka	ex/ks	иу/К9	nd / Ka	ug/Kg	ug/Kg	mg/Kg	ug/L	
CHAPTERS OF PORTS											
VOLATILE COMPONENTS	,	١	,	,			ı	'		,	5
laberatory Artifact									16 7		
Ethylmethylbenzene					18, 888 J	16,849 3					

NOTES: - Compound was not detected.

1 Quantitation is approximate due to limitations identified during the quality control review (data validation).

R Moreliable result - Compound may or may not be present in this sample.

Put This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

Put this result is qualitatively suspect since this compound was detected in field and/or laboratory blanks at similar levels.

May be analyzed.

			_	_				_					•
SMC Environmental Services Sample Mumber Laboratory File Mumber	ices Sample Humber		57-583-A 8416-41	57-583-A 57-583-A01 8416-41 8416-4181	\$8-\$83-8 8916-92	58-583-8 58-583-801 8916-92 9916-9281	59-583-C	59-583-EBL1 59-583-CBL1 5916-930L1 8016-030L2	59-583-CDL1 59-583-CDL7 8016-03012	8016-14	61-526-8	63-TB 8016-07	62-FB 8816-96
Remarks	ra			Dilution		Dilution		Dilution	Dilution			Trip Blank	Field Slank
mits	OAIC Reco	-	63/fm	ey/kg	ex/for	pg/kg	by/for	by/bn	ey/Kg	₩J/Kg	ng/kg	1/64	1/64
Compounce	Reporting Limit (Ag)	Reporting Limit (Sol)											
Kepose	1.132	£.		#		#	35.4.1	3	5	5.92 J		\$	
Mirex	0.01544	18.5	3.51)	=	1.21)	=	\$2.3	3	#	38.2	3.81 J	器	C 90100.3
Quantitation limit Hultiplier	tiplier		1.37	5	1.82	F	1.45	#	=	1.10	1.1	F	 E
Date of Sample Collection	2		01/15/91	5	01/15/91	F	01/15/91	3	3	01/15/91	01/15/91	F	01/15/91
Date Sample Received by Laboratory	Laberatory		81/16/91	=	91/16/91	=	01/16/91	2	F	01/16/91	01/16/91	季	01/16/91
Date Sample Extracted			01/17/91	II.	\$1/17/91	35	¥1/17/91	20:		01/17/91	81/17/91	3	01/17/91
Date of Sample Amalysis	U.		81/24/91	E	01/25/91	=	01/24/91	3	#	11/25/91	11/25/11	#	01/24/91
Instrument Wsed for Awalysis	lysis		15-23 25-23	\$	#5-S3	#	5 -53	F	E	ਲ ::	# E	E	ES-23

VOLATILE GREANIC ANALYSIS	- AMALYTICAL RESULTS		SOLIDS REP	ALL SOLIDS REPORTED ON A DRY WEIGHT BASIS	SISWB 1N9		-page 17
SMC Environmental Services Laberatory Sample Mumber	Sample Humber		64-582-A 8437-#1	65-S#2-8 8#37-#2	66-S82-C	67-FB 8637-94	68-18 8937-95
Remarks	p					Field Blank	Trip Blank
S wits	GIN.		61/for	ba/ka	ba/kg	3/fm).
VOLATILE COMPOUNDS	Quantification Limit (Mg)	Quantitation Limit (Sol)		Analyzed Tuice			
Chloromethane	=	=	~	~		-	
Bromome thans	=	=	200				,-
Vinyl Chloride	=	=	**	=		*	, 100
Chloreethame	=	=	~	=		20	=
Methylene Chloride	v	ۍ.	14 8	1890 B/390 B	134 8	3.1	=
Acetome	=	=	~	=		20	~
Carben Bisulfide	s,	5	749			79	78
1,1-Wichloreetheme	5	ıs	-			**	_
1,1-Bichloree thame	5	S.	-	=		~	
Total 1,2-Bichloroetheme	5	5	93 9. J	270 1/-		~	**
Chloroform	5	\$T	219	7,		3340	-
1,2-Dichlereethage	5	5	70			70	
2-Butanone	10	:	12 44 B	650 11/-	300 8	>=	_
1,1,1-Trichloroethame	5	s	-	2		76	200
Carbon Tetrachloride	5	5	-	2/		**	~
Vimyl Acetate	10	*	***	**		~	-
Bromodichloromethame	5	5	~	R/		~	_
1,1,2,2-Tetracklereetkame	5	5	240 J	=	1346	-	
1,2-Dichleropropame	5	57	2 141 J	S40 3/-		*	-
trans-1,3-Bichlereprepene	5	5	-	1 /		-	74
Trichlereethene	5	5	1384 J	-/c eev	ZI J		*
Bibrosochierose thane	5	5	-			-	-
1,1,2-Trichloreethame	5	5	70	R/		~	=
Веплене	5	5	~			-	-

SMC Environmental Services S Naberatory Sample Mamber	Sample Number		64-582-A 8037-01	64-582-A 65-582-B 66-582- 8937-B1 8937-B2 8937-B	66-582-£	67-F8 #37-14	68-T8
Remarks	Ped					Field Blank Trip Blank	Trip Bla
Units	_		ng/Kg	ng/Kg	uq/Kg	1/54	
ADIVILE COMADOMBS	Quantitation Limit (Aq)	Quantitation Limit (Sol)		Amalyzed Tuice			
cis-1,3-Bichloropropene	5	s,	*	=		-	24
Bramoform	5	55	~			-	~
2-Rexamone	=	=	-	2		~	=
-Nethyl-2-Pentanane	=	=	~	=		*	~
Tetrachleroetheme	5-	5	27 10 J	659 J/-		-	~
Tolvene	ۍ.	5	19 90 3	-/r 049!	310 J	3500	240
Chlorobenzene	<i>5</i>	57	23, 880 J	65,889 3/71,889 3	291 3	-	~
Ethylbenzene	S.	5	1848)	3294 1/-	3	æi.	>**
Styrene	5 7	5	×	2/		-	-
Tetal Xylemes	5	5	C 418	-/c 019	110 J	~	-
	~ ~	_	240	249/688	67.1	<u>:</u>	<u>.</u>
pamtitation limit Hultiplie			1/16/91	1/16/91	1/16/91	1/16/91	1/16/91
wastitation Limit Hultiplie late of Sample Collection			1/17/91	1/17/91	1/17/51	1/17/91	1/11/91
pastitation limit Multiplier late of Sample Collection hate Sample Received by Laboratory	ratery			1 1 1 1 1 1	1/23/91	1/21/91	1/21/91
Quantitation Limit Hultiplier Nate of Sample Collection Nate Sample Received by Labor Nate of Sample Analysis	ratory		1/23/91	1/3 4 1/0	-		

It This result is qualitatively suspect since this compound use detected in field and/or laboratory blanks at similar levels.

R bureliable result - Compound may or may not be present in this sample.

J quantitation is approximate due to limitations identified during the quality assurance review (data validation).

He This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

SMC Environmental Services Sample Mumber laboratory Sample Mumber	ample Mounder		\$4-582-A \$637-91	65-582-8 8937-92	8437-93	8837-84	68-TB 8937-95
Remarks		re			1	Field Blank	Trip Blank
wits	02	Reg	ley/kg	ba/ga	ву/ку	ng/L	1/94
SEMIVOLATILE COMPOUNDS	Quantitation Limit (Aq)	ation Quantitation (Aq) Limit (Sol)					
Pheno l	=	338		×	*		7
bis(2-Chloroethyl)ether	=	33		=	#		=
2-Chlorophenol	=	330		=	#		2
1,3-Dichlorobenzene	11	33		E	3		#
1,4-Dichlerobenzene	10	33		3	5		#
Benzyl Alcohol	16	339		菱	E		2
1,2-Bichlorobenzene	10	33		3	*		=
2-Nethylphenol	1	33		#	#		y
bis(2-Chloroisopropyl)ether	=	334		F	E		=
4—He thy Lphe rol	17	33#		7	*		3
#-Witrose-di-n-Propylamine	14	ಷ		3	E		E
Hexach lorse thane	=	334		=	E		=
Mitrobenzene	=	33		¥	=		E
Isophorone	#	339		¥	#		E
2-Hitrophenel	1#	ಭ		E	=		=
2,4-Dimethylphenol	11	33		Ē	2		=
Benzoic Acid	æ	1659		ş	#		=
bis{2-Chloroethoxy}methame	=	33		.	3		=
2,4-Dichlorophenol	=	33		T	3		#
1,2,4-Trichlorobeazepe	=	33		E	=		季
Naphthalene	1	334		3	¥		#
4-Chloroaniline	10	334		¥	3		=
Bexachlorobutadieme	=	a		E	=		=
4-Chloro 3-Methylphenol	=	33		.	季		E
	:	3 3		Ē	.		

SMC Environmental Services Sample Mumber laboratory Sample Number	ample Mumber		64-582 à 8#3/-#1	65 -SB2 8 8#37-#2	66-S82-C 8#37-#3	87-F8 8437-14	68-18 8#37-#5
Remarks		Me				Field Blank	Trip Blank
Units .	0.	Red	ng/Kg	ng/Kg	ug/Kg	ug/l	, []
SENTYOLATTLE COMPOUNDS	Quantitation limit (Aq)	Quantitation Limit (Sol)					
Nexachlorocyclopentadiene	□	33		**	*		3 E
2,4,6-Trichlorophemol	=	33		*	F		李
2,4,5-Trichlorophemol	2	1658		**	*		
2-Chloronaphthalene	=	338		2	5		孁
2-Mitroamiline	S	1650		3	=		3
Dimethylphthalate	11	334		=	£		=
Acenaphthylene	=	33		#	李		蓬
3-Mitroanilime	\$	1659		=	=		#
Acenaphthene	10	334		3	#		=
2,4-Binitrophenol	æ	1659		=	3		茎
4-Mitrophemol	5 .	1659		E	#		輩
Dibenzofuran	1	33		Z	=		F
2,4-Dinitrotolueme	10	33		K A	E		E
2,6-Dinitrotoluene	=	3		**	3		₹
Diethylphthalate	10	3		F	E		E
4-Chloro phen ylphenylether	10	334		E.	5		#
Fluorene	1	338		=	*		業
4-Witreamilime	æ	1659		=	Œ	345	建
4,6-Binitro-2-Methylphemol	Ş	1654		3	E		灵
M-Mitrosediphenylamine	10	334	160 J	=	5		=
4-Bromophenylphenylether	=	ಚ		E	F		ž
Nexachlorobenzene	10	330		#	3		3
Pentachlorophemel	5	1659		=	#		2
		3	_	E	E		

EXTRACTABLE DESABLE ANALYSIS	- AMALYTICAL RESULTS	- SIJASBK II	ALL SOLIOS	ALL SULIUS MEPURIED ON A DRY LATIONT BASIS	ME TONE BASIS		-page 21
SMC Environmental Services S. Laberatory Sample Mounter	Sample Mumber	&	64-582-A 8837-61	65-S82-B 8437-42	64-582-C	\$7-F8	68-18 803/-05
Remarks		Spic !				Field Blank	Trip Blank
wits		,	19/Kg	ug/Kg	uq/Kg	ng/L	- J.
SEMINGLATILE COMPOUNDS	Quantitation limit (Aq)	Quantitation Limit (Sol)					
Anthracene	=	33		3	E		=
Di-n-Butylphthalate	=	33		2	3		鑋
Fluorantheme	=	33		3	2		
Ругене	=	33		3	\$		3
Butylbenzylphthalate	=	334		F	5		3
3,3'-Dicklorobenzidine	2	664		#	15		套
Benza(a)anthracene	160	339		f	#		夢
bis(2-Ethylhexyl)phthalate	7	334		#	3		#
Chrysene	=	ಷ		3	5		#
Bi-n-Bctylphthalate	=	33		F	E		2
Benzo(b) fluoranthene	15	33		*	=		=
Benzo(k)fluoranthese	=	ಚ		5	#		=
Benzo(a)pyrene	=	떫		#	¥		E
Indeno(1,2,3-cd)pyrene	=	334		弄	F		\$
Wibenz(a, k) anthracene	=	33)		E	E		2
Benzo(g,h,i)perylene	=	33		3	*		#
Quantitation limit Multiplier	-	-	÷.	#	=	3	2
Bate of Sample Cellection			1/16/91	Ē	₹ .	1/16/91	\$
Date Sample Received by Laboratory	ratory		1/17/91	F	#	1/17/91	#
Nate Sample Extracted			1/21/91	Ē	\$	1/21/51	*
Bate of Sample Assalysis			1/23/91	E	李	1/30/91	E

- Compound was not detected.

B. This result is qualitatively suspect since this compound was detected in field and/or laberatory blanks at similar levels.

B. This result - Compound may or may not be present in this sample.

B. Whreliable result - Compound may or may not be present in this sample.

J. Quantitation is approximate due to limitation ified during the quality assurance review (data validation).

B. This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the probably higher due to a low bias identified during the part of the probably higher due to a low bias identified during the part of t

ity assurance review.

CLP - TENTATIVELY IDENTIFIED COMPOUNDS	- ESTINATED (ESTINATED CONCENTRATIONS	- 13	_		-page 22
SMC Environmental Services Sample Number		64-S82-A	65-582-8	66 SB2-C	67-F8	81-89
Laboratory Sample Number		8937-41	8937-92	1 1437-43	8437-14	8437-45
Remarks	W			†	Field Blank Trip Blank	Trip Bland
lhits .	PAIGH PROP	us/Kg	63/бя	eg/Kg	1/gu	1/64
SEMMOUNDS	Ž		Analyzed Twice			
LINE ATTIC PROMPTURE			-	-		
laboratory Artifact					7.7 R	,
SEMENACIALITE COMPONENTS			3	*	'	7
Slank Contaminant		2540 (3) 8				
Unknoom (Number of Peaks)		5290 (5) J				
Alkane		3189 J				
	E TES			-		

B This result is qualitatively suspect since this compound was detected in field and/or laboratory blanks at similar levels.

R Bureliable result - Compound may or may not be present in this sample.

J Quantitation is approximate due to limitations identified dering the quality assurance review (data validation).

BU This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.

EXTRACTABLE EXGRAIC AMALYSIS	•	AMALYTICAL RESULTS -	WIT SOLIBS	ALL SOLIDS REPORTED ON A DRY WEIGHT BASIS	HEIGHT BASIS	•	-page 23
SMC Emvironmental Services Sample Mumbe	ample Humber		64-582-A	65-S82-B	9-285-0	67-FB	68-18
(Laboratory Sample Number	٠.	re.	8937-91	8437-42	8437-03	8937-44	8837-85
Remarks	00/0	OPIG Per				Field Blank Trip Blank	Trip Bla
Units		-	nd/Ke	h)/fm	uq/Kg	Hg/L	1/6
COMPREMES	Reporting Limit (Aq)	Reporting Limit (Sal)					
Kepone	1.132	68.4	11.63		Ī		=
Hirex	9.9954	18.5	87.1	6.56 3	21.3 J		聚
euantitation limit Multiplier		-		1.1.	1.28	=======================================	.
Bate of Sample Collection			1/16/91	1/16/91	1/16/91	1/16/91	3
Date Sample Received by Laboratory	ratory		1/17/91	1/17/91	1/17/91	1/17/91	.
Bate Sample Extracted			1/21/91	1/21/91	1/21/91	1/21/91	3
Bate of Sample Amalysis			1/24/91	1/24/91	1/24/91	1/24/91	#
Instrument Used for Analysis			15 -53	ις- <u>s</u>	ਲ- ::	15-53	#
		MOTES:	penediso3	Compound was not detected.	-		

8 This result is qualitatively suspect since this compound was detected in field and/or laboratory blanks at similar levels.
R Horneliable result - Compound may or may not be present in this sample.
J Quantitation is approximate due to limitations identified during the quality assurance review (data validation).
WH. This compound was not detected, but the quantitation limit is probably higher due to a low bias identified during the quality assurance review.
MA Not analyzed.